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VASCULAR DISEASE

SMALL ARTERY ELASTICITY AS A PREDICTOR OF ADVERSE CARDIOVASCULAR OUTCOMES IN A NATIONALLY REPRESENTATIVE COHORT

ACC Poster Contributions
Ernest N. Morial Convention Center, Hall F
Tuesday, April 05, 2011, 9:30 a.m.-10:45 a.m.

Session Title: Vascular Stiffness and Carotid Imaging
Abstract Category: 8. Vascular Biology/Atherosclerosis/Thrombosis/Endothelium
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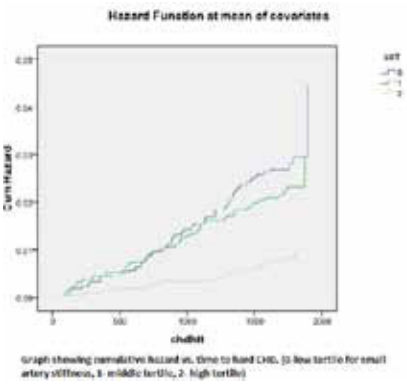
Background: Although arterial stiffness (mostly aortic) has been shown to be associated with adverse cardiovascular outcomes, there have not been any large studies that have evaluated the role of small artery elasticity(SAE).

Methods: Multi-Ethnic study of Atherosclerosis (MESA) is a population based study (n=6336) of varying ethnicities, aged 45-84 years, free from clinical cardiovascular disease (CVD). We did a post-hoc analysis of the NHLBI Limited Access Dataset of MESA subjects with data on Small artery elasticity. Univariate and multivariate analyses were carried out using SAS 9.1. Baseline age, sex, diabetes, MI, CHF, stroke, hypertension, race, body mass index, insurance status and smoking was adjusted for using Cox proportional hazard regression. Primary end points were hard CHD, all CHD, hard CVD and all CVD. SAE was analyzed as a continous and categorical variable.

Results: Mean age was 62±10 years, mean LDL 117± 31 mg/dl, mean SAE was 4.5±2.8 ml/mmHg x 100.. 47% were males and 44% had hypertension. Over an average follow up of 4.5 years, 119(1.9%) had hard CHD, 214(3.4%) had all CHD, 194(3.1%) had hard CVD and 297(4.7 had all CVD. On multivariate analysis, SAE was associated with increased risk for the end-points (Table).

Conclusion: Small artery elasticity is an independent predictor of adverse cardiovascular outcomes.



Graph showing cumulative hazard vs. time to hard CHD. (1-low tertile for small artery stiffness, 2- middle tertile, 3- high tertile)

ENDPOINT	HAZARD RATIO	95% C.I. and P value
Hard CHD*	0.58	0.38-0.82, p = 0.003
All CHD†	0.68	0.51-0.90, p = 0.008
Hard CVD‡	0.58	0.43-0.79, p = 0.001
All CVD§	0.66	0.52-0.85, p = 0.001

Adjusted Hazard Ratios For Cardiovascular Endpoints

(* includes myocardial infarction (MI), resuscitated cardiac arrest (RCA), CHD death, # includes hard CHD and stroke death, † includes hard CHD and angina, ‡ includes all CHD, stroke, stroke death and other CVD death)